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***Compositions based on oil unsaponifiable fractions of wheat germ and sesame seeds, and their uses including cosmetics and as a dietary supplement.***

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**Abstract of FR 2692783 (A1)**

The invention relates to compositions based on oil concentrates, wheat germ and sesame oil, and their uses,

including as a cosmetic in the field of protection and treatment of the effects of UVA.

## COMPOSITIONS unsaponifiable fraction OIL WHEAT GERM AND SESAME, AND USES IN PARTICULAR IN COSMETICS AND QUALITY DIETARY SUPPLEMENT.

The present invention relates to novel compositions based on oil unsaponifiable fractions of wheat germ and sesame seeds and their uses, especially in cosmetics and as

dietary supplement.

According to the European Pharmacopoeia edition page 20 V.3 4 7, the term "unsaponifiable matter" applies to substances, non-volatile extracts, with an organic solvent, a solution of the test substance after saponification of vegetable or animal oil. The method of molecular distillation, which will be further detailed later in this text, can concentrate the oils, especially from plants (vegetable oils) and get focused again designated below by concentrates in which the unsaponifiable concentration can reach about 10 to 20%, this concentration being about 1 to

2% in the starting oils.

Studies by the inventors from concentrates from wheat germ oil and sesame oil, such as those obtained by molecular distillation of these oils have the following results: the tests carried out by a bioluminescence

technique ( in which superoxide radicals produced by the hypoxanthine / xanthine oxidase generate photon emission), show that the concentrate of wheat germ oil exerts a y.

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scavenger of oxygen free radicals (especially superoxide ions  $O_2^-$ ), slightly lower than that of vitamin E, the effect of hydroxyl radical scavenger has been tested by the colorimetric assay of malondialdehyde produced by the degradation of deoxyribose by free radicals generated by the hypoxanthine / xanthine oxidase, the activity of the concentrate of wheat germ oil is insignificant compared to that of sesame oil concentrate, the latter being however lower than that measured in the same experimental conditions for vitamin E. That in order to obtain a composition having both a hydroxyl radical scavenger effect comparable to that of the concentrate of sesame oil and a scavenger effect of oxygen free radicals and cytoprotective activity comparable to concentrate of wheat germ oil, the inventors prepared a composition consisting of a

mixture of two concentrates mentioned above.

The anti-radical action of the composition thus obtained was measured in the operating conditions defined below, and compared to the same action measured for the concentrate of wheat germ oil, sesame oil and vitamin E. The inventors have determined that, unexpectedly, the composition comprising the above-mentioned mixture of two concentrates, has the characteristic of having a

radical-scavenging activity with respect to irradiation WVA is a share of more than one presented the concentrate of wheat germ oil, and other than that presented by the

sesame oil concentrate.

The antiradical activity of the composition above

mentioned is also higher than that measured for vitamin E, whose own work is itself

higher than that of the two concentrates above

mentioned. The inventors also found that, of

equally unexpected way, the above composition

mentioned consists of the combination of the two concentrates, is active not only as a preventive or immediate against the effects of UVA, but also in the curative effects of UVA rays while vitamin E and the two mentioned above concentrates only have almost no or no action

curative against these effects.

Thus, the present invention relates, in general, any composition comprising the unsaponifiable fraction of sesame oil mixed with one (or more) part (s) unsaponifiable (s) from any oil, including vegetable oil, may contain vitamin E, especially soybean oil,

and advantageously oil wheat germ.

The present invention more particularly any composition comprising the unsaponifiable fraction of wheat germ oil mixed with the fraction

sesame oil unsaponifiable.

The invention more particularly relates to any composition as described above, and wherein the unsaponifiable fraction of wheat germ oil and sesame oil are those contained in the respective concentrates of these oils, these concentration is advantageously prepared by distillation

Molecular these oils.

The method of molecular distillation mentioned above is achieved by spreading the oil in a thin layer on the heated surface of a conical rotor rotating at high speed is maintained a vacuum of about  $10^{-3}$

mm Hg (about 0.13 Pa) on the grounds of distillation

tion. Under these conditions there is evaporation, not boiling, from the hot surface of the components of a unsaponifiable whose separation becomes possible with respect to glycerides, the advantage being that oil and unsaponifiable matter, these products deemed sensitive - do

are not degraded during the operation.

The distillation temperatures are preferably between about 190 and about 260 W WC, preferably between about 2000 and about 2200 C C, and vacuum of the order of about 0.1 to about 1.5 Pa Fa,

preferably about 0.13 to about 0.5 Pa Pa.

Preferably the amount by weight of unsaponifiable fractions in oil concentrates, wheat germ and sesame oil are approximately

% To about 25% and about 10% to about 20%.

Advantageously, in the mixture, the amounts by weight of oil concentrates, wheat germ and sesame oil vary respectively between about 10% to about 90%, and between about 90% to about 10%, so that the total amounts of these two oils do 100%.

Preferably the amount by weight of oil concentrates, wheat germ and sesame oil are respectively about 50%.

The invention also relates to any cosmetic composition comprising a composition as described above according to the invention, preferably in combination

with a physiologically acceptable vehicle.

The cosmetic compositions of the invention are advantageously formulated for topical use, such as creams, emulsions, ointments, or in a form suitable for applying lip (in particular for the packaging in lip sticks ). The compositions of the invention can also be

administered orally, such as capsules or tablets.

The invention also provides the use of the above-mentioned compositions for the prevention and / or treatment of the skin of an individual against the effects of WVA.

As such the compositions mentioned above are specifically used as sunscreens, sunscreens, creams, restructuring, nutrients, anti-wrinkle (the fight against skin aging), and protective day.

The invention also relates to any method of cosmetic treatment comprising applying to the skin surface of an individual of a composition of the invention. The invention also provides the use of a composition as described above as a food composition (especially as a complement or nutritional supplement).

The invention also relates to any pharmaceutical composition comprising a composition as described above in combination with a vehicle physiologically acceptable.

The pharmaceutical compositions of the invention are particularly intended for the prevention or treatment of the effects of UVA on the skin, and prevention of skin aging.

The invention also provides a method for manufacturing the compositions described above, the method comprising: mixing the two oil concentrates, wheat germ and sesame oil as obtained by the distillation

method described in the journal Molecular 6 2692783 "Perfumery and cosmetics fragrances" (1985), No. 61, pages 91-96, is the pre-mix oils, wheat germ and sesame, followed by molecular distillation by the method described above. Concentrates mentioned above are advantageously obtained by molecular distillation by the method described above. However, they can be obtained by other methods, including the crystallization cold (see, for example article Jacini J: J ASS. AN OFF CHEM, 1967, 50, p 85-90), or by liquid-liquid extraction (see e.g. the article H KALLEL: REV FRANC OF FATTY, 1975, 22, 5, p.269-270). The invention is further detailed in the following using examples from manufacturing oil concentrates, wheat germ and sesame oil and mix them according to the invention, formulations of compositions based on this mixture, and measures UVA effects of the latter.

I Examples of preparation of both concentrates and mixtures thereof Example 1 Sesame oil is introduced into an appropriate molecular distillation apparatus, preferably of the type centrifuge, the sesame oil: crude, virgin, semi-refined or refined with a feed rate of 10 to kgs per hour and preferably between 15 and 20. The parameters of the distillation are as follows: temperature: 190 to 2200 C, vacuum of 1 to 10 g (0.13 to 1.3 Pa). The percentage is distilled close to 10, Carefully collect the distillate.

The richness in this non-saponifiable



distilled fraction is between 10% and 20%.

Example 2 The oil of wheat germ is introduced into an appropriate molecular distillation apparatus as described above, oil, raw wheat germ, virgin, semi-refined with a feed rate of from 10 to 30 kgs per hour and preferably between 15 and 25. The parameters of the distillation are as follows: temperature: 200 to 2500 C, vacuum of 1 to 10 g (0.13 to 1.3 Pa). The percentage distillate being between 6 and 12, This distillate is collected carefully. The richness in this non-saponifiable distilled fraction is between 15% and 30%.

Example 3 Preparation of the mixture of two concentrates of Examples 1 and 2 The actual preparation of the mixture can be performed in a conventional mixer equipped with an anchor, the operation in an inert atmosphere by heating to a temperature of 600 C.

Examples of formulas II I. Crème nutritional W / O emulsion

% Hydrogenated polyisobutene	4.00	3.00	Caprylic capric
mineral oil and lanolin alcohol	2.50	myristyl myristate	
2.00	2.00	Phosphate trioleate	2 EO oleyl alcohol
1.50	Cetyl Palmitate	dodecyl glycol copolymer	peg 45 1 ,
50	concentrates sesame oil and wheat germ oil		
triglycerides	1.00	C 18-36	1.00 Magnesium sulfate
0.30	Preservative	0.30	Fragrance 0.30 GD 700 Purified water
100.00	Q sp 2 Restructuring Cream	O / W emulsion%	
Cetearyl glucoside	4.00	3.00	myristyl myristate
concentrates sesame oil and wheat germ oil	2.00	200	
2.00	70641 V polysilane	Octyl dodecanol (Eutanol G)	2 ,
00	Squalane (Perhydrosqualene natural)	Jojoba oil	2.00

2.00 2.00 diethylene glycol stearate cetostearyl alcohol  
 25 EO 1.0 Perfume 0.30 Preservative GD O 700 0, 20  
 Trisodium citrate 0.10 Purified water qs 100 , 00 3 Sun  
 Oil SPF 6% Dipelargonate propylene glycol 61.00  
 Cyclomethicone (Dow Corning 344 Fluid) 10.00 10.00  
 Citrate trioctyl Dioctylmaleate 10.00 Octyl  
 methoxycinnamate 4.00 concentrates of sesame oil and  
 wheat germ oil Benzophenone 3 2.00 Perfume 2.00 1.00  
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### III STANDARDS OF CONCENTRATES

1 CONCENTRATION OF sesame oil Tasting: oily liquid,  
 yellow-orange with a characteristic odor, with a white  
 crystalline deposit. Solubility: chloroform, ethyl ether  
 soluble soluble ethanol insoluble Peroxide: <10 meq / kg  
 Acid: <20 Absorbance specific 287 nm:> 15 Fatty acid  
 composition: Palmitic C 16 5 to 20% C 16 palmitoleic  
 acid 0, a 1% C 18 stearic acid 4-8 C 18% Oleic acid 35-  
 45 Linoleic acid C 18% from 30 to 47% linolenic acid C  
 18, 0.1 to 1% arachidic acid C 20 0.1-1 , 5%  
 unsaponifiable content from 10 to 20 g/100 g sterol  
 content 3-8 g/100 g sesamin content> 4 g/100g content  
 sesamolin> 2 g/100 g

### 2 CONCENTRATION OF OIL WHEAT GERM

Organoleptic characteristics: translucent oily liquid cide,  
 yellow-orange with a characteristic odor.

Solubility: Soluble Hexane Chloroform Soluble Alcohol  
 Partially soluble Acid: <20 Peroxide: <10 meq / kg  
 unsaponifiable content: 15 to 25% tocopherol content>  
 1% Total sterol content: 5% to 20% campesterol relative:

15% \* 30% relative stigmasterol: <2%% B-sitosterol relative: from 50 to 70% The unsaponifiable content is measured by the method European Pharmacopoeia edition page 2 3 4 7 V.

#### IV STUDY OF antiradical activity CONCENTRATES SESAME OIL, WHEAT GERM, AND Mixtures thereof: COMPARISON WITH VITAMIN E.

##### 1 PRODUCTS TESTED

Three samples of concentrates listed below have been tried: CSS batch 123061: sesame concentrate (about 13% of unsaponifiable matter). CGB lot 102100: concentrate of wheat germ (about 20% of unsaponifiable matter).

CBS 137111 lot: a mixture of both.

The activity of these three lots was compared with that of a solution of vitamin E (tocopherols was dosed at Merck

92% purity by HPLC).

##### 2 MATERIALS AND METHODS

January 2 cell cultures.

The cells are fibroblasts isolated from a foreskin of a young child.

2.2 Assessment of cell viability.

Cell viability was quantified by a colorimetric method based on mitochondrial metabolism by the cells of a tetrazolium salt

(MTT).

## 2.3 Irradiation with UVA.

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### 2.3 1 Generation of free radicals.

Free radicals are generated in cell culture by irradiation with ultraviolet radiation to the lamp is a lamp used Vilber Lourmat (T 4 OM) mercury vapor whose emission spectrum is maximum at 365 nm intensity of irradiation is controlled by a radiometer A irradiation intensity of 2.3 Joules / cm<sup>2</sup> gives a toxicity close to 70% fibroblasts 24 hours after irradiation cells were exposed after 48 hours of culture, radiation through a Hanks solution without phenol red after exposure, the saline is removed and the cells are in contact with their culture medium for 24 hours cell viability was then determined by the MTT test Figure below shows the following protocol:

OJ J 2 J 3

middle MTT viability TJVA irradiation 2.3 J / cm<sup>2</sup> Hanks solution

### 2.3 2 Protocol of drug administration.

The antiradical properties of each product were sought after preventive administration, when administered simultaneously (immediate) aggression

administration or after irradiation (curative).

Finally, previous protocols have been associated.

1) preventive administration.

0.1 ml of each dilution in the complete culture medium are introduced into the wells, then the seeding is made with 0, 1 ml of cell suspension (200,000 cells / ml) The contact time

with the cell culture is 48 hours (J Jo 2) -

2) immediate administration. In this case, the assets are in Hanks solution without phenol red at different concentrations after previous irradiation of cells, Hanks solution is removed and replaced with complete medium for 24 hours and cell survival was determined.

3) administration curative.

The dilutions of the product in complete culture medium were added immediately after irradiation

and the contact time with the culture is 24 hours.

4) protocols.

The various protocols can be combined together

according to the following:

+ Immediate preventive.

Now + healing.

+ + Immediate preventive healing.

2.3 3 witnesses.

Various non-irradiated controls are performed: absolute indicator with MEM complete Witnesses solvents containing respectively 1% ethanol or 0.5% of dimethylformamide, active control non-irradiated at each concentration

assets considered.

### 3 RESULTS

3.1 Cytotoxicity (Table I) Dimethylformamide at 1% has a significant cytotoxicity that kills about 1 / 3 of

cells.

At a concentration of 0.1 g / 1, cytotoxicity appears for 3 concentrates, it is due to dimethylformamide, which is a concentration of 1%

these conditions.

For lower concentrations of extracts, made by successive dilutions, there is no

apparent cytotoxicity.

A concentration of 0.05 g / l in the concentrate, the percentage of dimethylformamide is 0.5% which is not cytotoxic It is this concentration that will

used in irradiation tests.

### 3.2 Action antiradical against UVA.

Vitamin E 3.2 1 (Table II) in preventive, vitamin E protects the cells fully against UVA to the concentration of

Ag / ml.

In short term, a less potent protective effect was also observed a filter effect due to the disorder solutions can be superimposed on the highest concentrations. Vitamin E does virtually no healing effect. The association confirmed the effects of treatment

of vitamin E in prevention and immediate treatment.

3.2 2 Concentrate sesame (Table III) The concentrate sesame has a preventive effect until the concentration of 10 mg / ml it has no immediate effect (a slight effect is observed at higher concentrations, this one is linked a filter effect

produced by the disturbance of the environment), or curative effect.

When immediate treatment or prophylaxis + + + immediate healing are associated, the action is greater than the additive of treatment effects

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For the three separate treatments associated protection of 86% is achieved at 5 mg / ml while in the

concentration of the separate treatments are ineffective.

3 2 3 Concentrate wheat germ (Table IV) The concentrate of wheat germ has a preventive effect up to 5 mg / ml (lowest dose studied in this case) it has no immediate effect

in healing whatever the concentration used.

The combination of the three protocols allows a 100% protection at all concentrations of active study. Mixture of 3.2 4 2 concentrations (Table V) The mixture of two concentrates provides a very important protective effect of about 90% with respect to UVA to the concentration of 5 gg / ml the mixture is not active immediately.

Curative treatment revealed a significant efficiency of about 90% of this mixture to the 2 highest concentrations (100 and 50 Mg / ml).

By combining immediate treatment and healing, the effectiveness is about 60% to a concentration of 5 gg / ml, confirming the curative effect



observed. The combination of the three protocols provides a 90% protection up to 5 mg / ml.

#### 4 CONCLUSION

The three concentrates all have an activity antiradical respect to UVA irradiation.

They differ in the strength of their action and the time their activity appears O " (preventive, immediate curative).

Preventive treatment, the three concentrates are effective and can be ranked in order of decreasing activity: mixture > wheat germ > Sesame Different concentrates do not immediate action.

Finally, the mixture of wheat germ, sesame activity reveals a cure to the concentration of 10 gg / ml It is important to note that these effects do not appear with concentrates of wheat germ or sesame administered separately or with vitamin E. Also, the mixture of two concentrates brings up a curative action with respect to the toxicity induced by UVA radiation that does not exist for most antiradical conventionally used.

concentrate sesame wheat germ 2 \_g EM 30, 36, \_\_, \_\_ \* tt

Table I: Cytotoxicity in% compared to controls

concentrates on culture of fibroblasts 48 hours after

witnesses produced Concentration 1% absolute DMF

100 ug / ml 50 up / ml | 10 u L / iml | iml LL 2 1 LL i vr

Royl IML-ri \_racé\_\_\_Irians \_\_ mixture of two treatment

modalities concentration 1000 glg / ml 500 gg / ml 100 gg

/ ml 50 glg / ml 10 pg / ml Preventative 100 100 100 100  
 100 (P) immediate 100 95 88 81 69 p + 1 100 100 100 1  
 00 100 curative 26 22 38 29 22 (c O) i + C 77 72 85 91  
 72 p + l + c 100 100 100 100 100 Table III: EFFICIENCY  
 AS A% OF CONCENTRATION OF SESAME treatment  
 modalities concentration 100 gg / ml 50 gg / ml l 10 g / ml  
 g/ml1 January 5 pg / ml Preventative 34 91 100 37 16  
 000 OO immediate p + l 83 87 55 00000 OO healing  
 i + c 81 47 25 16 O + p i + c 100 98 100 86 38

J l

Table V: EFFICIENCY AS A% OF THE MIXTURE OF  
 CONCENTRATES Al j 2 1 Table IV: EFFECTIVE  
 CONCENTRATION% OF WHEAT GERM treatment  
 modalities concentration 100 gg / ml 50 gg / ml 10 gg / ml  
 5 g / ml Preventative 88 90 75 63 Immediate 0000 p + i  
 76 94 85 84 Curative 20 14 14 10 i + c 34 37 22 22 p +  
 ilc 100 100 100 98 treatment modalities concentration  
 Gig / ml 50 lZG / ml 10 glg / ml 5 gg / ml 1 lg / ml  
 Preventative 97 90 96 81 2 immediate 18 14 O O p + i  
 100 90 90 87 0 curative 82 100 39 6 O i + c 57 73 58 21  
 2 P i + c + 95 92 80 65 21 X 4 W18 2692783

## CLAIMS

1. A composition comprising the unsaponifiable fraction  
 of sesame oil mixed with one (or more) part (s)  
 unsaponifiable (s) from any oil, including vegetable oil,  
 may contain vitamin E, including the soybean oil, and  
 preferably oil wheat germ.

2 The composition of claim 1, characterized in that it

comprises the unsaponifiable fraction of wheat germ oil mixed with the fraction sesame oil unsaponifiable.

3 The composition of claim 1 or claim 2, wherein the unsaponifiable fraction of wheat germ oil and sesame oil are those contained in the respective concentrates of these oils, these concentrates are themselves obtained by molecular distillation of these oils, especially made at a temperature between about 1900 C and about 2600 C, preferably between about 2000 C and about 2200 C, and vacuum of the order of about 0.1 Pa to about 1.5 Pa, preferably about 0.13 Pa to about 0.5 Pa.

4 A composition according to claim 1 to 3, wherein the quantities by weight of unsaponifiable fractions in the concentrations of wheat germ oil and sesame oil are approximately 15% to about 25% and about 10% to about 20%.

5. Composition according to claim 1 to 4, wherein the quantities by weight of oil concentrates, wheat germ and sesame oil vary respectively between about 10% to about 90%, and between about 90% to about 10%, so that the total quantities of these oils do 100%.

6 The composition of claim 5, wherein the quantities by weight of oil concentrates, wheat germ and sesame oil are respectively the order of 50%.

7 The composition characterized in that it includes a composition according to claim 1 to 6, preferably in

combination with a vehicle physiologically acceptable.

8 The composition of claim 7, wherein it is formulated for topical use, such as creams, emulsions, ointments, or in a form suitable for applying lip, and is usable products such as solar contractors, creams restructuring, nutrients, anti-wrinkle, and protective day.

9 Method for cosmetic treatment, characterized in that it comprises applying a composition according to claim 7 or claim 8 of the surface

skin of an individual. Nutritional supplement characterized in that it includes a composition according to claim 1 to 5.